Operating Instructions
Water Heater
Thermo 90 / 90 S

Webasto Thermosysteme International GmbH
Postfach 80 - D-82132 Stockdorf - Hotline (01805) 93 22 78
Hotfax (0395) 55 92-353 - http://www.webasto.de

General Information

Dear Webasto Customer !

We assume that the workshop / service center that carried out the installion explained to you the operation and principle of functioning of your new heater to your complete satisfaction. With these operating instructions we would like to provide you with an overview of the use of the Thermo 90 / 90 S.

Maintenance and Safety Information

Within the scope of the StVZO (Road Traffic Licensing Act) "General Design Approvals" laid down by the Federal Office for Motor Traffic exist for the Thermo 90 / 90 S water heaters.

The installation of the units must be carried out in accordance with the enclosed installation instructions. The installation must be checked in accordance with the Legal Provisions for Installation. For details refer to the installation instructions.

The year of the initial operation must be durably marked on the heater's nameplate by removing the non-applicable years.

When installing the Thermo 90 / 90 S D heater in vehicles for the transport of hazardous materials, the requirements laid down in ADR 002 and ADR 003 (Technical Guidelines relating to the ordinance of transporting hazardous materials on the road) must be fulfilled in addition to those of the StVZO.

The heater must be switched **off**:

Danger of explosions and asphyxiation

- at filling stations and tank farms.
- in locations where flammable vapours or dust may accumulate (e.g. in the vicinity of fuel-, coal-, sawdust or grain depots).
- in enclosed spaces (e.g. garages). This should also be considered when pre-setting heater operating times or using the Telestart remote control.

The heater must **not** be

- exposed to temperatures greater than 120°C (storage temperature). Exposure to such temperatures may cause damage to the electronic components.
- operated without a minimum level of 20% of good quality antifreeze in the water of the heating circuit.

Ident-Nr. 1300309A 3/0011

The heater **must**:

- be operated with the fuel specified on the namplate.
- In the case of a severe build-up of smoke, unusual combustion noises or fuel smell, the heater is to be put out of operation by removing the fuse and may only be restarted after it was inspected by Webasto-trained personnel.
- be operated at least once a month for 10 minutes, with the vehicle engine cold and at the lowest fan setting. The heater should be checked annually by a qualified expert, preferably prior to the heating season commencing.

Liability claims:

- Webasto will not assume any liability if the installation instructions and the notes contained therein are not observed. The same applies to improperly performed repairs or those where others than genuine replacement parts have been used. In those cases, the heater's General Design Certification and thus the General Operating Permit (homologation) will be invalidated as a consequence.
- Claims can only be asserted if the claimant can prove that the maintenance and safety notes were adhered to.

Operation

Before switching the heater on, set the vehicle heating system to the "warm" position and the vehicle heater fan to the lowest setting (less power consumption)!
Applicable to Thermo 90 / 90 S -ADR only: The heater is switched on by means of the switch. A ADR situation (forced shut-down) is initiated when
- the vehicle engine is switched off
- a pumping device is put into operation,

in which case the short after-run period is terminated after 20 seconds.
Thereafter, the electronic control unit is in the "fault lock-out" state. Before the heater can be restarted, the On/Off switch must be set to "Off".
The disconnect switch (Emergency Stop switch) may only be actuated in an emergency situation since this will shut the heater down without any after-run being performed (danger of overheating).

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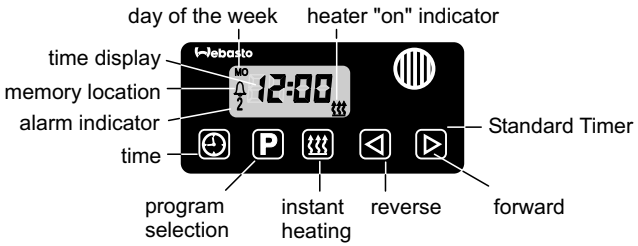
Standard Timer



General	The standard digital timer enables you to preset the start of the heater operation up to 7 days in advance. It is possible to program 3 different starting times, only one of which can be activated. The standard digital timer features a wakeup alarm function. When the ignition switched on, the timer displays the current time and the day of the week. When the heater is switched on, the display and the buttons are illuminated. After the power supply has been connected, all symbols on the display will flash. The current time and weekday must be set.
Operation	The timer can be operated in that all flashing symbols can be adjusted by means of the ◀ and ▶ buttons. If the buttons are not pressed within 5 seconds, the time displayed will be stored. If the ◀ and ▶ buttons are pressed for more than 2 seconds, the fast time-setting mode is activated. If the ignition is switched off while the heater is operating in the continuous mode, the remaining operating time of 15 minutes is displayed and the heater continues to operate for this period of time.

Switching the heater on	Manually: by pressing the button (continuous heating mode) Automatically: by programming the heater starting time
Switching the heater off	Manually: by pressing the button Automatically: after the programmed operating time has elapsed With the heater running: by programming the remaining operating time
Setting time/ day of the week	Press the button for more than 2 seconds - time of the day is flashing - and set the clock using the ◀ and ▶ buttons. Day of the week is flashing - adjust the day of the week.
Viewing the time	With the ignition switched off: press the button
Programming heater starting time	Press the P button - the memory location is flashing - using the ◀ and ▶ buttons set start of the heater operating time. Day of the week is flashing - set the day of the week. By repeatedly pressing the P button, memory locations 2 and 3 can be programmed or the time display mode can be reached.
Recalling/ erasing preset times	Repeatedly press the P button until the desired memory location is displayed. To erase the preset time, press the P button several times until the time of the day is displayed instead of the memory
Programming duration of operating time	The heater must be switched off. Press the ◀ button for 3 seconds - operating time is flashing - and set the desired operating time (10 to 120 minutes) using the ◀ and ▶ buttons.
Setting the remaining operating time	Set the desired remaining operating time (1 to 120 minutes) using the ◀ and ▶ buttons. The remaining operating time refers to the time the heater still continues to remain in operation. It can only be changed while the heater is in operation and the ignition switched off.
Setting the wakeup time	A wakeup time can only be programmed on the standard digital timer. The wakeup time is not bound to a specific day of the week. Repeatedly press the P button until the bell symbol appears on the display. Set the desired wakeup time using the ◀ and ▶ buttons.The alarm clock turns off after 5 minutes or when one of the buttons is pressed.
Recalling/ erasing the wakeup time	Repeatedly press the P button until the bell symbol appears on the display - read off wakeup time. To erase the wakeup time: press the P button until the bell symbol is no longer visible on the display.
Remote control	Possible by means of an optional external "instant heating" button
Vehicles with ADR equipment	On ADR vehicles it is not possible to program a preset starting time. The remaining time is shown on the display while the heater is in operation. The clock can be set. The alarm clock function can be programmed on the standard digital timer.

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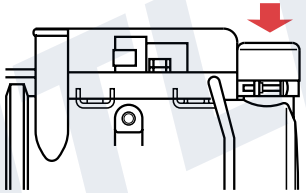
Troubleshooting

In the event of a malfunction, fuses and electrical connections should be checked for proper condition and security.
If this action does not correct the defect, consult your authorized Webasto dealer.
After the heater has been shut down due to a fault lock-out, a coded flashing signal is emitted through the operation indicator during the after-run cycle of the heater. These coded flashing signals are designed to assist the authorized Webaste dealer in isolating the fault.

Heater turns itself off automatically (=fault lock-out)

Cause	Remedy
Combustion was not established during start-up and start-up repetition Flame goes out during operation	Switch heater off and then on again. If the heater fails to re-start consult your authorized Webasto dealer
Voltage drop for more than 20 seconds	Check fuses, electrical connections and battery
Heater overheats due to lack/loss of coolant	Top up coolant in accordance with the vehicle manufacturer's instructions
Shutdown initiated by temperature limiter (overheating)	Pushbutton of the temperature limiter must be pushed in prior to restarting the heater.



Fault Code Display

After the occurrence of a malfunction, the fault is indicated on the display of the digital timer if the heater is equipped with a standard digital timer.

Fault Codes on the Display of the Combination or Standard Digital Timer

NOTE:
If the heater is activated by the switch, the types of malfunctions are indicated by coded flashing signals via the operation indicator light during the after-run period of the heater. The coded flashing signals correspond to the numbers in the table below

F 01	No start-up (after 2 start-up attempts)
F 02	Flame extinguished (at least > 5)
F 03	Undervoltage or overvoltage
F 04	Premature flame detection
F 05	Flame detector interruption or flame detector short-circuit
F 06	Temperature sensor interruption or temperature sensor short-circuit
F 07	Metering pump interruption or metering pump short-circuit
F 08	Fan motor interruption or fan motor short-circuit or incorrect fan motor speed
F 09	Pencil-type glow plug interruption or pencil-type glow plug short-circuit
F 10	Overheating
F 11	Circulating pump interruption or circulation pump short circuit

Subject to change

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